Rhabdoweisia fugax (Hedw.) Bry. Eur.
Rhacomitrium aciculare (L.) Brid.
Rhacomitrium canescens (Weis, Timm.) Brid.
Rhacomitrium fasciculare (Schrad.) Brid.
Rhacomitrium heterostichum (Hedw.) Brid.
Rhacomitrium lanuginosum (Ehrh., Hedw.) Brid.
Rhacomitrium patens (Dicks.) Hueb.
Rhacomitrium sudeticum (Funck) Bry. Eur.
Rhacomitrium varium (Mitt.) Lesq. & J.
Rhaphidostegium demissum (Wils., Sch.) DeNot.
Rhodobryum roseum (Weis.) Sch.
Rhytidiadelphus squarrosus (L.) Warnst.
Rhytidiadelphus triquetrus (L.) Warnst.
Rhytidium rugosum (Ehrh.) Kindb.
Saelania glaucescens (Hedw.) Broth.
Scleropodium purum (L.) Limpr.
Sphagnum acutifolium Ehrh.
Sphagnum cymbifolium Ehrh.
Sphagnum cuspidatum Ehrh.
Sphagnum fimbriatum Wils.
Sphagnum fuscum (Sch.) V. Klinggr.
Sphagnum Girgensohnii Russ.
Sphagnum imbricatum Hsch.
Sphagnum molle Sull. (*S. compactum*)
Sphagnum molluscum Bruch.
Sphagnum papillosum Lindb.
Sphagnum recurvum P. B.
Sphagnum Russowii Warnst.
Sphagnum squarrosum Pers.
Sphagnum subnitens Russ.
Sphagnum subsecundum Nees.
Stereodon arcuatiformis Broth.
Stereodon arcuatus Lindb.
Stereodon circinalis (Hook.) Mitt.
Stereodon cupressiformis (L.) Brid.
Stereodon curvifolius (Hedw.) Brid.
Stereodon fertilis (Sendt.) Lindb.
Stereodon Haldanianus (Grev.) Lindb.
Stereodon imponens (Hedw.) Brid.
Stereodon plicatulus Lindb.
Stereodon pratensis (Koch) Warnst.
Stereodon reptilis (Rich.) Mitt.
Tetraplodon angustatus (L. f., Sw.) Bry. Eur.
Tetraplodon mnioides (L. f., Sw.) Bry. Eur.
Thamnium alopecurum (L.) Bry. Eur.
Thuidium delicatulum (Dill., L.) Mitt.
Thuidium minutulum (Hedw.) Bry. Eur.
Thuidium quadrifarium Mitt.
Tortella caespitosa (Schwaegr.) Limpr.
Tortella tortuosa (L.) Limpr.
Trichostomum cylindricum (Bruch.) C. M.
Trematodon longicollis Rich.
Ulota americana (P. B.) Mitt.
Webera annotina (Hedw.) Bruch.
Webera cruda (L.) Bruch.
Webera elongata (Hedw.) Schwaegr.
Webera longicolla (Sw.) Hedw.
Weisia viridula (L.) Hedw.

THE GENUS CLAOPODIUM IN EUROPE

WILLIAM EDWARD NICHOLSON

The name *Claopodium* was first used in 1884 by Lesquereux and James (Mosses of North America, p. 327) for a subgenus of *Hypnum* to include five species from the northwestern portion of North America, allied to *Thuidium* in the papillose areolation and the form of the leaves, but differing in the absence of filamentous paraphyllia. Lesquereux and James claim alliance with *Eurhynchium* for the subgenus, but it is difficult to see any special relationship in this direction, and Dr. G. N. Best in his Revision of the *Claopodiums* (Bull. Torrey

Club **24**: 427. 1897) is probably nearer the mark in assigning the group a position midway between *Anomodon* and *Thuidium*. In 1893 MM. Renauld and Cardot in their Musc. Am. sept. raised *Claopodium* to the rank of a genus, and it has also been adopted by Dr. Brotherus (in Engler and Prantl, Die Natürlichen Pflanzenfamilien), who omits *C. laxifolium* (Schwgr.) and includes *C. Bolanderi* Best and a few species from southern and eastern Asia. No species has been accredited to Europe, though the existence in Portugal of a plant which obviously belongs to this genus has been known for some time.

In the year 1866 Count von Solms Laubach spent some months in Algarve, the southermost province of Portugal, exploring the moss flora; especially that of the Serra de Monchique, the results of which he embodied in his *Tentamen Bryo-Geographiae Algarviae Regni Lusitani Provinciae* (Hals, 1868). Among the mosses enumerated by him as occurring in this district was a plant which he referred to *Thuidium punctulatum* DeNot. The plant was found in the warm open parts of a chestnut wood near the town of Monchique, growing on the ground in dense sterile tufts strongly reminding him of *Anomodon attenuatus*. The identification of the plant with *Thuidium punctulatum* is a little curious, as the branching and leaves of that plant are very different and, being monoicous, it is fairly often in fruit; moreover its resemblance to the *Anomodon* is not very striking. The Algarvian plant was subsequently dealt with by Schimper in the second edition of his *Synopsis* (1876) and is doubtfully referred by him to *Leskea* as *Leskea? algarvica.*

Subsequently authors have not added much to our knowledge of the plant; Limpricht (**2**: 766) points out that it is doubtless a *Thuidium* as Milde had already distinguished it in his herbarium. Roth practically contents himself with quoting Limpricht and admits that he had not seen the plant. Indeed its rarity in herbaria has, no doubt, been one of the principal causes of the lack of recognition of its true affinities.

In May 1911, I spent about three weeks in Portugal in company with Mr. H. N. Dixon, F. L. S., mostly at Caldas de Monchique in Algarve. Here we found Solms Laubach's plant, not only in the dry chestnut woods where he originally found it, but also and far more luxuriantly in the dry bed of a small torrent nearer Caldas de Monchique, where for a short distance it practically carpeted the bed and banks of the torrent. We also found the same plant sparingly at Bussaco and by the banks of a little streamlet at Louzá near Coimbra, from which it would seem that it has a fairly wide distribution in Portugal.

On examination of this plant on my return I recognized affinities with *Claopodium Whippleanum* (Sull.) Ren. and Card., and Mr. Dixon, on my referring to him, concurred in its belonging to *Claopodium* and suggested that it was perhaps nearer to *C. leuconeurum* (Sull. and Lesq.) Ren. and Card. M. Cardot himself, to whom the plant was submitted, also agreed in referring it to *Claopodium* and this has also been accepted by Mrs. Britton. Dr. Best, to whom the plant has been submitted by Dr. Grout, goes further and says that he is unable to distinguish our plant from *C. leuconeurum*, which in turn he considers doubtfully distinct from *C. Whippleanum*. This latter view of his is quoted, apparently with approval, by Dr. Brotherus [Die Nat. Pflanzenf. (Musc.) 1009].

In the absence of sufficient fruiting material I am unable to give any very definite opinion on the question of the identity of *C. leuconeurum* and *C. Whippleanum*. Lesquereux and James give distinguishing characters in the fruit,* apparently of some value, but so far as the vegetative characters are concerned I have carefully compared various gatherings of *C. Whippleanum*, including a small specimen of the cotype of *C. Whippleanum* kindly sent by Dr. Grout to Mr. Dixon, and *C. leuconeurum* with the Portuguese plant and, though there is a certain amount of variation in the width of the leaves, I can find nothing whatever to justify the separation of the plants on these characters.

The figure in the Natürlichen Pflanzenfamilien, copied from Sullivant's of *C. leuconeurum*, gives the leaf cells of this species as having normally two papillae on each cell, but in the specimens which I have examined both of this, of *C. Whippleanum* and of the Portuguese plant, I find most frequently one large papilla situated about the middle of the lumen. No fruit has ever been found on the Portuguese plant, which appears to be the male only. I have not been able to find anything except antheridia on the material which I have examined in this respect.

The occurrence of *Claopodium* in Europe is interesting and it adds another species to the rather small list of distinctively southern mosses which are common to the two continents.

The substantial identity of the nearctic and palearctic moss floras has long been recognized, and this identity is probably greater than our present nomenclature would seem to imply, as a study of the treatment of *Pseudoleskea* in the two areas and a close comparison of the forms would, I think, show. The probable distribution of this common flora by circumpolar land is also recognized, but towards the south of both areas the species tend to become more distinct. I do not, however, think that it is necessary to predicate Atlantis to account for such as do occur in both. The distribution of many of these was probably by way of circumpolar land also, though it may go back to a more remote period. A large portion of such an early flora, the remains of which are now found in the more southern parts of both regions, may well have disappeared and the survivors are limited to such parts of the two where approximately the same conditions obtain. There is no doubt a good deal in common between the climate of the coastal regions of California and that of Portugal.

Dr. Best draws my attention to another example of discontinuous distribution in the genus in the case of *C. pellucinerve* (Mitt.) Best, which is found in the Himalaya and again in the Yukon territory of Alaska.

Other southern species common to Europe and N. America are *Fabronia pusilla* Radd., *F. octoblepharis* (Schleich.) Schwgr., *Haplohymenium triste* (Ces.) Kindb., *Habrodon Notarisii* Sch. and *Trematodon longicollis* Michx. The distribution of the latter in Europe is very remarkable, as it is limited to a very few localities in Italy and the adjacent islands, where the ground is warmed

* Dr. Best in his Revision of the *Claopodiums* (loc. cit.) reduces these alleged differences in the fruit to practically nothing.

and moistened by the hot vapor from the fumaroli or smoke holes of semi-extinct volcanoes.

The story of our Portuguese plant points to the value and necessity of that interchange of ideas between the bryologists of the two continents which the "Bryologist" under Mrs. Smith's able management has done so much to promote.

If Dr. Best's identification of *C. Whippleanum* and *C. leuconeurum* with one another and with our Portuguese plant stands, as I certainly think will prove to be the case, the synonymy of the plant would seem to be as follows: that of the American plants has been taken from Dr. Best's Revision of the *Claopodiums* (loc. cit.).

Claopodium Whippleanum (Sull.) Ren. & Card. Musc. Am. sept. 1893.
Hypnum Whippleanum Sull. Pac. R. R. Rep. **4**: 190. 1856.
Thuidium leuconeurum Sull. & Lesq. in Sull. Icon. Musc. Suppl. 104. 1874.
Thuidium Solmsii Milde in herb. (18—.)
Leskea? algarvica Sch. Syn. 597. 1876. (Ed. 2.)
Hypnum leuconeurum L. & J. Mosses of N. America. 328. 1884.
Thuidium leskeoides Kindb. Bull. Torrey Club **17**: 277. 1890.
Claopodium leuconeurum Ren. & Card. Musc. Am. sept. 50. 1893.

NOTES ON LEPIDOZIA SETACEA

E. J. Hill

In the summer of 1907 I collected this scale moss in Bergen swamp, Genesee County, N. Y. A bed of *Sphagnum* was seen to be mixed with hepatics, and a packet of it was taken. When examined some time afterward three were found associated with the *Sphagnum acutifolium*, which formed the bulk of the packet. They were *Mylia anomala* (Hook.) S. F. Gray, *Lepidozia setacea* (Web.) Mitt. and a *Cephalozia* which in its leaf characters answered very well to *C. connivens* (Dicks.) Lindb., all of which are known to grow in *Sphagnum*. As all were without fruit the determination had to be based on other characters. *L. setacea* being new to me, and either rare or seldom detected, and liable to be confused with the more common *L. sylvatica* Evans, some was sent to Dr. Evans, who confirmed the identification. Thus another station for this species is added to the few that are definitely known in our flora. It has five in New England: Bethany, Conn.; Woods Holl, Mass.; Lonesome Lake in the Franconia Mountains, N. H.; Waterville, N. H.; and Mt. Desert, Me.

The flagella which spring from the axils of the ventral leaves of *L. setacea* were well supplied with rhizoids. These have a globose enlargement at the distal end by means of which it clings to the mosses among which it grows. They sometimes adhere so firmly that the fragile stems are broken in efforts to detach them. (See Warnstorf, Kryptogamenfl. der Mark Brandenburg **1**: 257. 1902.) I found similar spheroidal expansions of the ends of some of the rhizoids of the *Cephalozia*. They were not as abundant as on the stems of the *Lepidozia*, but to all appearance serving the same purpose. Contact with